Abstract

An electrically powered bicycle includes a hub motor, which is mounted to the bicycle frame by its axle. A drive sprocket mounted to the outer case of motor is engaged by a chain to the sprocket on a multi-speed hub on the rear wheel, so that when the motor turns, it drives the wheel. A freewheel, also mounted to the outer case of motor, is engaged by a chain to the large sprocket on the pedal crank, such that when the motor is operating, it does not turn the pedal sprocket. When the pedals and the motor are both operating and the sprocket on the freewheel is rotated as fast as the motor, the pedals can drive the motor, and consequently, the bicycle. An additional driven sprocket is mounted to the motor case and an additional freewheel is mounted to the multi-speed hub, and both are connected by a third chain so that when the bicycle is coasting (i.e., the motor is not driving the rear wheel), the rear wheel will drive the motor to provide downhill, regenerative braking capability.